

## **Product Highlights**

The MI-Series is designed for military applications and is based on Vicor's 1st Generation family of zero-current/zero-voltage switching, component level DC-DC converters. Operating at frequencies in excess of 1MHz, the MI-Series offers state-of-the-art performance in terms of power density, efficiency, noise, ease of use, and reliability.

All units are manufactured in ISO 9001-registered facilities. Full epoxy encapsulation in Vicor's industry standard package enables the MI-Series to meet MIL-STD-810 environmental requirements for humidity, fungus, salt, fog, explosive atmosphere, acceleration, vibration, and shock. (See page 32.)

Standard features such as wide output trimming/programming, current limiting, remote sense, output inhibit, and latching OVP and OTP combine to offer a high degree of protection, versatility, and reliability for military power systems.

# MI-200<sup>TM</sup>

## Military DC-DC Converters 50 to 100W

#### **Features**

- Inputs:28Vdc per MIL-STD-704D/E155Vdc per MIL-STD-1399A270Vdc per MIL-STD-704D/E
- Single output: 2 48Vdc
- Up to 23W/in<sup>3</sup>
- MIL-STD-810 environments
- Up to 90% efficiency
- Remote sense

- Current limit
- OVP and thermal shutdown
- Power boosters for higher power outputs
- ZVS/ZCS power architecture
- Low noise FM control
- Size: 4.6" x 2.4" x 0.5" (116,8 x 61,0 x 12,7mm)

#### Converter/Booster Specifications

(At T<sub>BP</sub> = 25°C, nominal line and 75% load, unless otherwise specified)

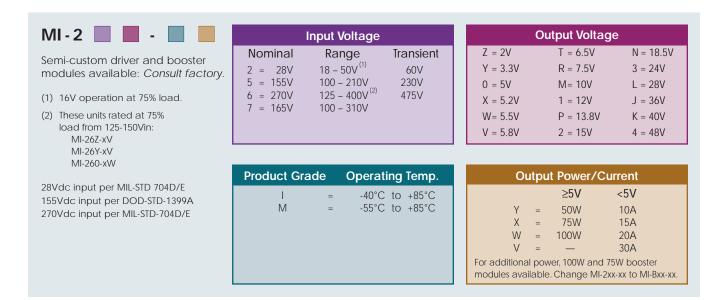
PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Characteristics					
Input voltage range	See	input volta	age chai	t	
No load power dissipation		1.35	2.0	Watts	
Output Characteristics					
Set point accuracy		0.5	1.0	% Vnom	
Load/line regulation		0.05	0.2	% Vnom	LL to HL, 10% to FL
G		0.2	0.5	% Vnom	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	%/°C	
Output noise - pp		1.0	1.5	% Vnom ງ	Whichever is greater
		100	150	mV }	20MHz BW
Output voltage trimming(1)	50		110	% Vnom	
Remote sense compensation	0.5			Vdc	
OVP set point (2)	115	125	135	% Vnom	Latching
Current limit	105		125	% Inom	Auto restart
Short circuit current (3)	20		130	% Inom	
Control Pin Characteristics					
Gate-in high threshold		6		Vdc	
Gate-in low threshold	0.65			Vdc	
Gate-in low current			6	mA	
Power sharing accuracy	0.95		1.05		
Isolation Characteristics					
Isolation (input to output)	3,000			V <sub>rms</sub>	
Isolation (output to baseplate)	500			$V_{rms}$	
Isolation (input to baseplate)	1,500			V <sub>rms</sub>	
Input/output capacitance		50	75	pF	
Environmental (MIL-STD-810)					
Altitude - method 500.2	70,000			feet	Procedure II
Humidity - method 507.2	86/240			%/hours	Procedure 1, cycle 1
Acceleration - method 513.3	9			g's	Procedure 2
Vibration - method 514.3	20			g's	Procedure 1, category 6
Shock - method 516.3	40			g's	Procedure 1
Reliability (MIL-HDBK-217F)					
25°C Ground Benign: G.B.		2,478,477		hours	
50°C Naval Sheltered: N.S.		584,920		hours	
65°C Airborne Inhabited Cargo	: A.I.C.	483,303		hours	
Thermal Characteristics					
Efficiency		80-90		%	
Baseplate to sink		0.07		°C/W	With thermal pads
Thermal shutdown	90	95	105	°C	Latching
Baseplate operating temperatu	ıre		+85	°C	See product grade
Storage temperature			+100	°C	See product grade
Mechanical Specifications	i				
Weight		6.0 (170)	Ο	unces (grams	5)

 $<sup>^{(1)}</sup>$  10V, 12V, and 15V outputs, standard trim range  $\pm 10\%$ . Consult factory for wider trim range.

<sup>(2)</sup> No over temperature or voltage protection in booster modules.

<sup>(3)</sup> Output voltages of 5V or less incorporate foldback current limiting; outputs of 10V and above provide constant current limiting.

#### **Configuration Chart**



#### **Product Grade Specifications**

PARAMETER	PRODUCT GRADE				
	I-Grade	M-Grade			
Storage temperature	-55°C to +100°C	-65°C to +100°C			
Operating temperature (baseplate)	-40°C to +85°C	-55°C to +85°C			
Power cycling burn-in	12 hours, 25 cycles	96 hours, 200 cycles			
Temperature cycled with power off	48 hours, 12-16 cycles -55°C to +100°C	48 hours, 12-16 cycles -65°C to +100°C			
Test data supplied at these temperatures*	-40°C, +80°C	-55°C, +80°C			
Warranty	2 years	2 years			
Environmental compliance	MIL-STD-810	MIL-STD-810			
Derating	NAVMAT P-4855-1A	NAVMAT P-4855-1A			

<sup>\*</sup>Test data available for review or download from vicorpower.com

#### **Mechanical Drawing**

## **MI-200 Mechanical Drawing**

